Notice of Allowability	Application No.	Applicant(s)	
	09/663,485	SARKAR ET AL.	
	Examiner	Art Unit	
	Kevin Bates	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *6-11-07*.

2. ☒ The allowed claim(s) is/are *19-55 renumbered 1-37*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 6-11-07
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

SALEH NAJJAR
SUPERVISORY PATENT EXAMINER

Response to Amendment

This Office Action is in response to a communication received on June 11, 2007.

The Drawings received June 11, 2007 has been entered into the application.

The Amendment to the Specification received June 11, 2007 has been accepted.

The Information Disclosure Statement received June 11, 2007 has been considered.

Claims 1-18 have been cancelled.

Claims 19-55 have been newly added.

Claims 19-55 are allowable.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael DeSanctis, Reg. No. 39,957 on July 18, 2007.

The application has been amended as follows:

In the claims:

1-18. (Cancelled)

19. (Previously Presented) A method comprising:

causing a subset of processing resources of a plurality of processing elements of a service processing switch to be allocated among a plurality of customers of a service provider by establishing a plurality of virtual routers (VRs) and assigning a subset of the VRs to the plurality of customers; and

performing a profile-driven routing configuration of a customer virtual private network (VPN) of a first customer of the plurality of customers by

programmatically determining a set of site reachability data corresponding to a plurality of sites of the first customer that are communicatively coupled to the service processing switch,

logically dividing the customer VPN into a plurality of edge segments, a plurality of intra-VPN segments and a plurality of inter-VPN segments, the plurality of edge segments connecting the customer VPN to the plurality of sites and including virtual interfaces connected to logical interfaces and tunnel interfaces having remote ends outside the customer VPN, the plurality of intra-VPN segments providing connectivity among customer VRs of the plurality of VRs that are associated with the customer VPN, and the plurality of inter-VPN segments providing connectivity between the customer VPN and a service provider VPN,

receiving at a service management system associated with the service provider from a customer network management system associated with the first customer, a custom routing profile associated with the customer VPN, the custom routing profile

identifying a first routing protocol to be used for the plurality of intra-VPN segments and a second routing protocol to be used for the plurality of edge segments, and

the service management system automatically configuring the customer VPN by programmatically generating appropriate routing configurations for the customer VRs based on the set of site reachability data and the custom routing profile and provisioning the customer VRs.

20. (Previously Presented) The method of claim 19, wherein the custom routing profile comprises information regarding one or more of the following:

routing administration status;

default site type; and

an Open Shortest Path First (OSPF) profile topology type.

21. (Previously Presented) The method of claim 19, wherein the custom routing profile comprises a site profile.

22. (Previously Presented) The method of claim 21, wherein the site profile includes a site type.

23. (Previously Presented) The method of claim 21, wherein the site profile includes a set of one or more site subnets.

24. (Previously Presented) The method of claim 19, wherein the custom routing profile is based upon a global routing profile.

25. (Previously Presented) The method of claim 24, wherein the global routing profile includes a default routing protocol for the plurality of edge segments.

26. (Previously Presented) The method of claim 19, further comprising disseminating the set of site reachability data to other routers within the customer VPN.

27. (Previously Presented) The method of claim 26, wherein said disseminating the set of site reachability data comprises reading a set of subnets for a customer site of the plurality of sites of the first customer and creating static routes for the set of subnets.

28. (Previously Presented) The method of claim 26, wherein said disseminating the set of site reachability data comprises placing the set of site reachability information in a directory and providing access to the directory via Lightweight Directory Access Protocol (LDAP).

29. (Previously Presented) The method of claim 26, wherein said disseminating the set of site reachability data comprises use of a static configuration in which all subnets associated with the plurality of sites are manually configured into the customer VPN.

30. (Previously Presented) The method of claim 26, wherein said disseminating the set of site reachability data comprises exchanging the set of site reachability data via a routing protocol.

31. (Previously Presented) The method of claim 26, wherein said disseminating the set of site reachability data comprises conveying the set of site reachability data via Multiprotocol Label Switching Label distribution Protocol (MPLS LDP).

32. (Previously Presented) The method of claim 26, wherein said disseminating the set of site reachability data comprises piggybacking the set of site reachability data on an Internet Protocol (IP) backbone routing protocol.

33. (Previously Presented) The method of claim 19, wherein the custom routing profile comprises an Open Shortest Path First (OSPF) profile and wherein the OSPF profile includes a route aggregation policy.

34. (Previously Presented) The method of claim 19, wherein the custom routing profile includes an area defining a set of VRs of the customer VRs, and wherein said programmatically generating appropriate routing configurations for the customer VRs includes generating a routing configuration for each VR in the set of VRs.

35. (Previously Presented) The method of claim 19, further comprising receiving a selection of one or more of the customer VRs to receive the programmatically generated routing configurations.

36. (Previously Presented) The method of claim 19, wherein said programmatically generating appropriate routing configurations for the customer VRs further comprises auto- generation of static routes for the customer VPN.

37. (Previously Presented) The method of claim 19, wherein the custom routing profile includes parameters relating to one or more of Internet Protocol Security (IPSec), LT2P, Point-to-Point Tunneling Protocol (PPTP), Generic Route Encapsulation (GRE) protocol and Multiprotocol Label Switching (MPLS).

38. (Previously Presented) The method of claim 19, further comprising providing a plurality of fixed routing profiles that are offered to the plurality of customers by the service provider as part of various differentiated service packages.

39. (Previously Presented). The method of claim 38, wherein the various differentiated service packages include one or more of the following:

a first service package that permits a customer to configure OSPF for the plurality of intra-VPN segments and the plurality of edge segments;

a second service package that permits the customer to configure OSPF for the plurality of intra-VPN segments and Routing Information Protocol (RIP) for the plurality of edge segments; and

a third service packet that permits the customer to configure static routing for the plurality of intra-VPN segments and the plurality of edge segments.

40. (Previously Presented) A method comprising:

causing a subset of processing resources of a plurality of processing elements of a service processing switch to be allocated among a plurality of customers of a service provider by establishing a plurality of virtual routers (VRs) and assigning a subset of the VRs to the plurality of customers; and

performing a profile-driven routing configuration of each of a plurality of customer virtual private networks (VPNs) for the plurality of customers by for each of the plurality of customers and each of the plurality of customer VPNs:

programmatically determining a set of site reachability data for a plurality of sites of the customer that are communicatively coupled to the service processing switch,

receiving at a service management system associated with the service provider from a customer network management system associated with the customer, a custom routing profile associated with the customer VPN, the custom routing profile identifying one or more routing protocols to be used for segments of the customer VPN, and

the service management system automatically configuring the customer VPN by (i) programmatically generating appropriate routing configurations for associated

customer VRs of the plurality of VRs based on the set of site reachability data and the custom routing profile and (ii) provisioning the customer VRs.

41. (Previously Presented) The method of claim 40, wherein the custom routing profile is based upon a global routing profile.

42. (Previously Presented) The method of claim 41, wherein the global routing profile includes a default routing protocol for a plurality of edge segments of the segments of the customer VPN.

43. (Previously Presented) The method of claim 40, further comprising disseminating the set of site reachability data to other routers within the customer VPN.

44. (Previously Presented) The method of claim 43, wherein said disseminating the set of site reachability data comprises reading a set of subnets for a customer site of the plurality of sites of the customer and creating static routes for the set of subnets.

45. (Previously Presented) The method of claim 43, wherein said disseminating the set of site reachability data comprises reading a set of subnets for a customer site of the plurality of sites of the first customer and creating static routes for the set of subnets.

46. (Previously Presented) The method of claim 43, wherein said disseminating the set of site reachability data comprises placing the set of site reachability information in a directory and providing access to the directory via Lightweight Directory Access Protocol (LDAP).

47. (Previously Presented) The method of claim 43, wherein said disseminating the set of site reachability data comprises use of a static configuration in which all subnets associated with the plurality of sites are manually configured into the customer VPN.

48. (Previously Presented) The method of claim 43, wherein said disseminating the set of site reachability data comprises exchanging the set of site reachability data via a routing protocol.

49. (Previously Presented) The method of claim 43, wherein said disseminating the set of site reachability data comprises conveying the set of site reachability data via Multiprotocol Label Switching Label distribution Protocol (MPLS LDP).

50. (Previously Presented) The method of claim 43, wherein said disseminating the set of site reachability data comprises piggybacking the set of site reachability data on an Internet Protocol (IP) backbone routing protocol.

51. (Previously Presented) The method of claim 40, further comprising receiving an indication of one or more of the associated customer VRs to receive the programmatically generated routing configurations for each of the plurality of customers.

52. (Previously Presented) The method of claim 40, wherein the custom routing profile comprises information regarding one or more of the following:

routing administration status;

default site type; and

an Open Shortest Path First (OSPF) profile topology type.

53. (Previously Presented) The method of claim 40, wherein the custom routing profile includes parameters relating to one or more of Internet Protocol Security (IPSec), LT2P, Point-to-Point Tunneling Protocol (PPTP), Generic Route Encapsulation (GRE) protocol and Multiprotocol Label Switching (MPLS).

54. (Previously Presented) The method of claim 40, further comprising providing a plurality of fixed routing profiles that are offered to the plurality of customers by the service provider as part of various differentiated service packages.

55. (Currently Amended). The method of claim ~~40~~ 54, wherein the various differentiated service packages include one or more of the following:

a first service package that permits a customer to configure OSPF for intra-VPN segments and edge segments;

a second service package that permits the customer to configure OSPF for the intra-VPN segments and Routing Information Protocol (RIP) for the edge segments; and

a third service packet that permits the customer to configure static routing for the intra-VPN segments and the edge segments.

Reasons For Allowance

The following is an examiner's statement of reasons for allowance:

The prior art of record does not teach or suggest neither singly nor in combination the features of a method of provisioning customer virtual routers in a service processing switch for a customer VPN where the configuration of the virtual routers is determined by site reachability data and a custom routing profile, the customer routing profile includes routing protocol to be used for segments of the customer VPN. These features are present in each independent claim

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No. 6597699 issued to Ayres, because it teaches provisioning virtual routers for customer VPNs.

U. S. Patent No. 7155518 issued to Forslow, because it teaches using QoS profiles to configure VPNs and virtual routers.

U. S. Patent No. 7225259 issued to Ho, because it teaches configuring virtual routers for service tunnels.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Bates whose telephone number is (571) 272-3980. The examiner can normally be reached on 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on (571) 272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Bates
July 19, 2007

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SUPERVISORY PATENT EXAMINER